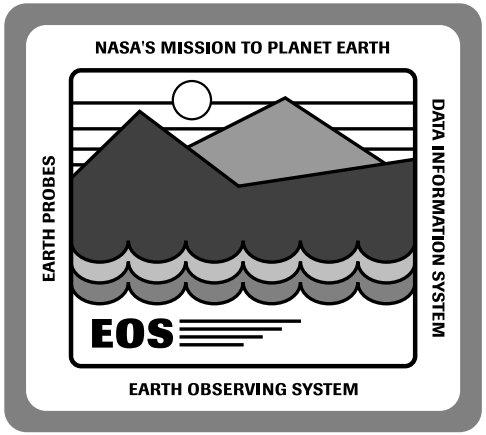
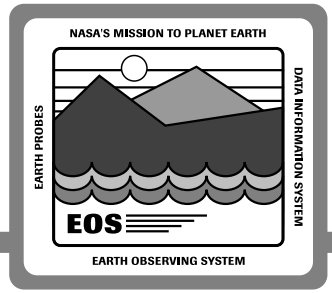


GCDIS/userDIS – Background & Issues

Mark Elkington

13 - 14 December 1993

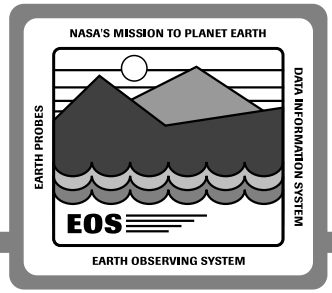
GCDIS/userDIS Study



Other sources of information outside of EOSDIS which are essential to Global Change Research. Other Global Change agencies hold important datasets. GCDIS is intended to provide interoperability across the agencies to support data search and access

An earth science data network in which the computer resources and expertise resident in the distributed user community are effectively utilised by removing the distinction between user and provider.

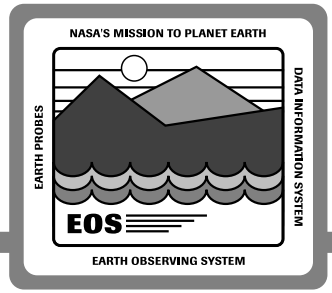
Study Motivation



- **NRC:** ***"Provision of common GCDIS (and UserDIS) software, database structures, and technical infrastructure for an interoperable network"***

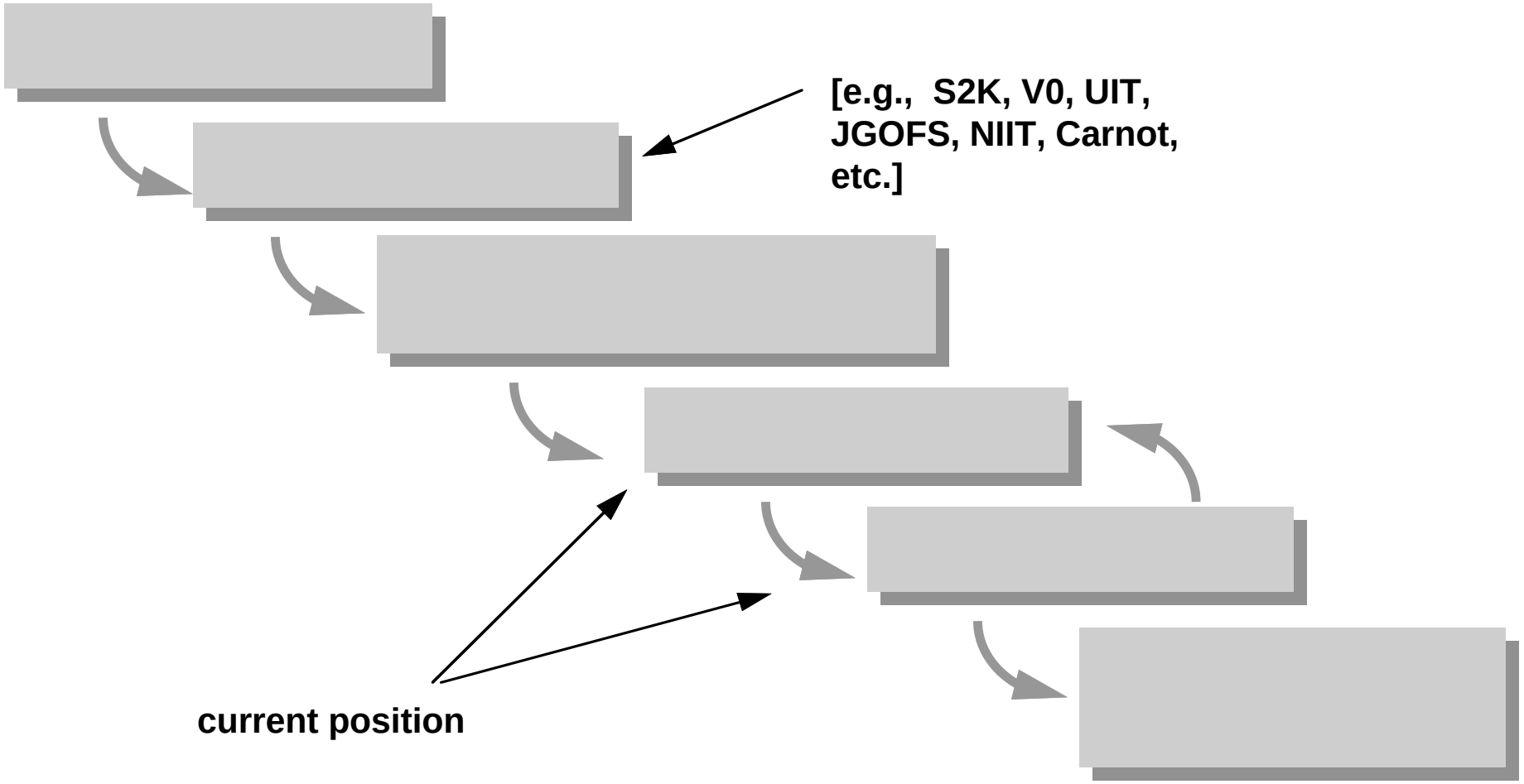
- **Study Expectation: There are components of GCDIS/userDIS which ECS could provide without leaving its mission envelope and without a lot of additional cost, by carefully choosing the appropriate architectural direction.**

Boundaries

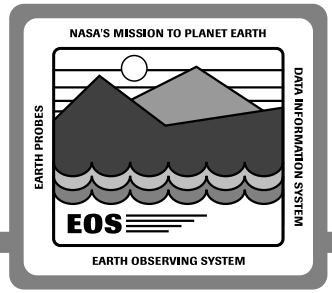


- **Cannot Compromise EOS Primary Mission Objectives**
  - **Must Preserve EOS Data (An Extremely Valuable National Resource)**
  - **Cannot Endanger The High-Volume Data Ingest and Production Operation**
  - **Cannot Degrade Critical Capabilities of EOS Researchers**
- **ECS Role Must Fit ECS Budget Constraints**
- **GCDIS/UserDIS Architecture Model Should Identify Components That Are Achievable Within The Time Frame Of Current ECS Contract**

Approach



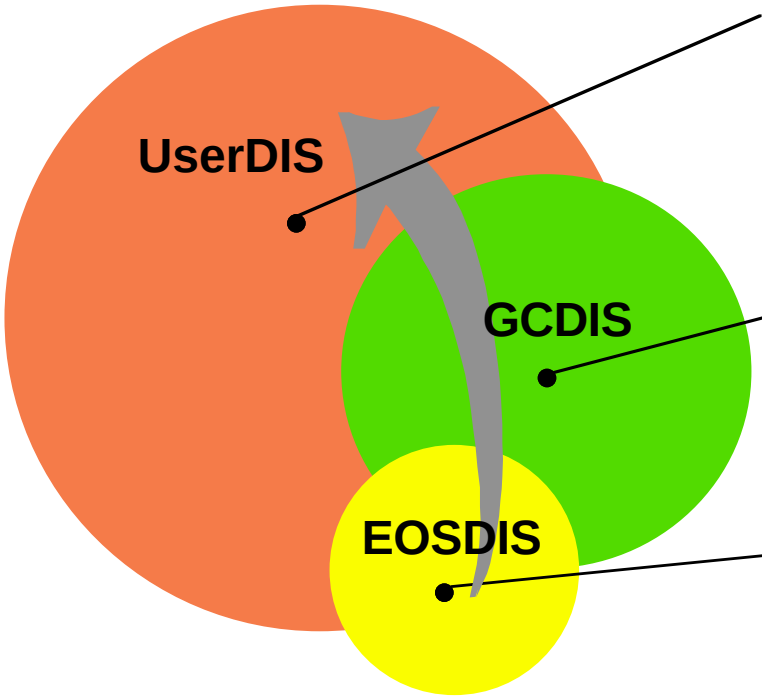
Key Characteristics of GCDIS/userDIS



As starting point for architectural analysis, characterized the differences between EOSDIS, GCDIS and UserDIS:

- **User Model**
- **Information Model**
- **System Distribution**
- **System Capacity**
- **System Quality**

User Model Concept



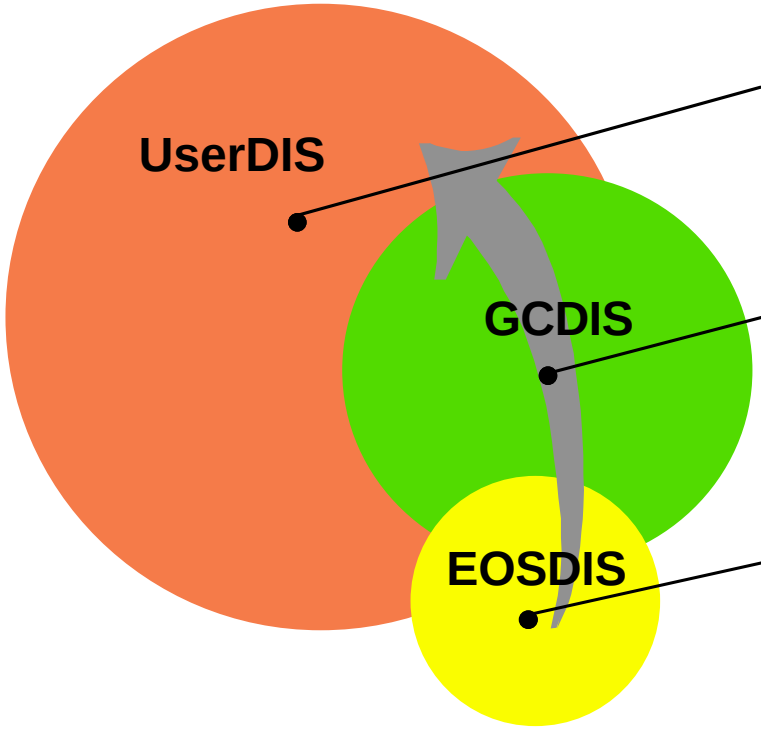
Open-ended, User Driven Mission and Service Requirements, Many Data Providers

Multiple Missions, Broad Range Of Service Requirements, Priority On Research And Data Analysis Users, Many Data Providers

Well Defined Mission And Service Requirements, Priority On Research and Data Analysis Users, Defined Data Providers (Except At External Interfaces)

- **objectives and missions of providers/users will differ widely**
- **should focus on earth science data and its users, but should not exclude other uses**

Information Model Concept

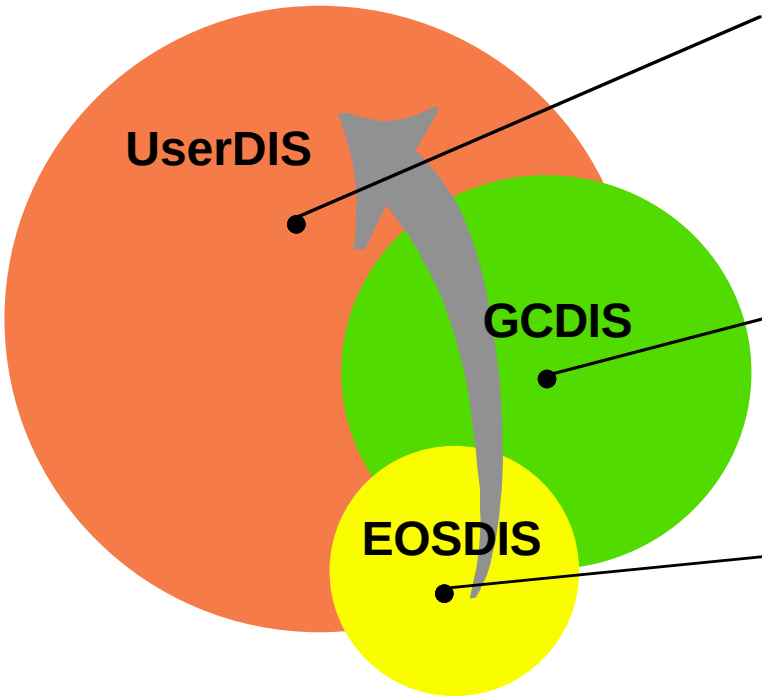


Many Information Models & Formats, Standardization Outside EOSDIS & GCDIS Scope, Hope For Adoption Of Evolving Standards

Multiple Information Models Within The System, Possibly Converging As Part Of Evolving Standard

Well Defined Community of Data Providers Likely to Converge on Information Model

System Distribution Concept

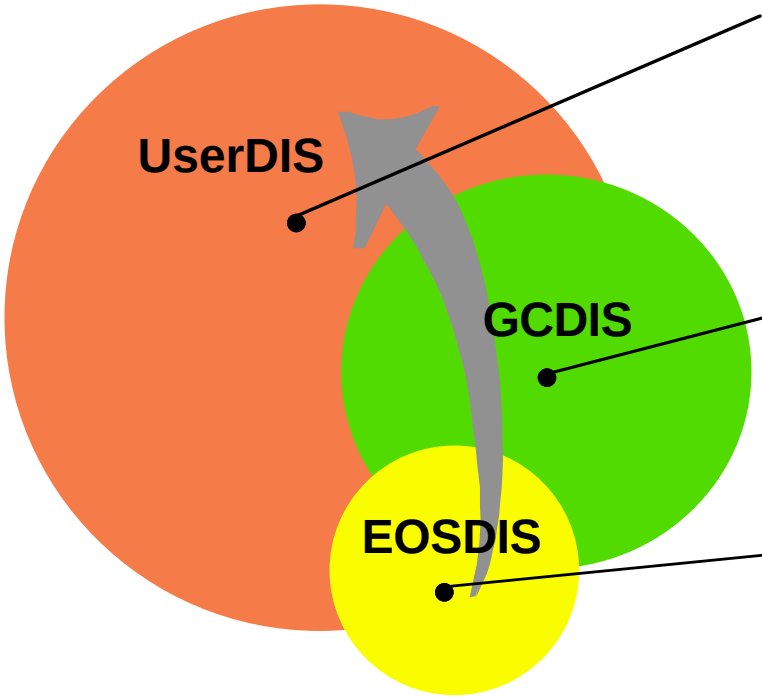


Many Sites, Unknown And Changing Topology, Distribution of Data And Services Unpredictable and Uncoordinated

Many Sites, Slowly Changing Topology, Distribution Of Data And Services May Be Coordinated

Small Number Of Sites, Predictable And Relatively Distribution Of Data And Services Is Managed

System Management Concept

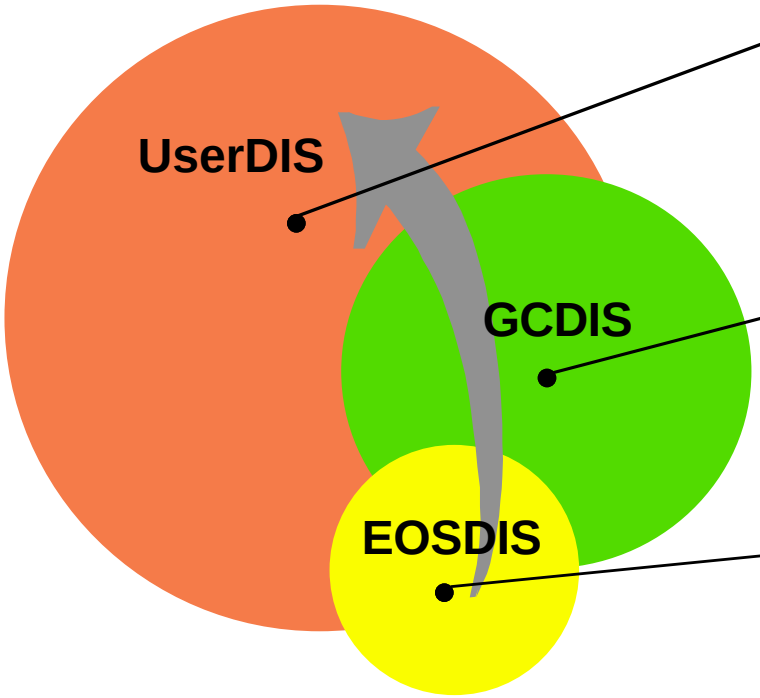


No Defined System Management or Development Policies And Authorities, All Responsibilities Are Voluntary

Federated System Management, To Some Extent Governed By Agreements (Policy Issue)

Coordinated System Management & Development Policies

System Capacity Concept

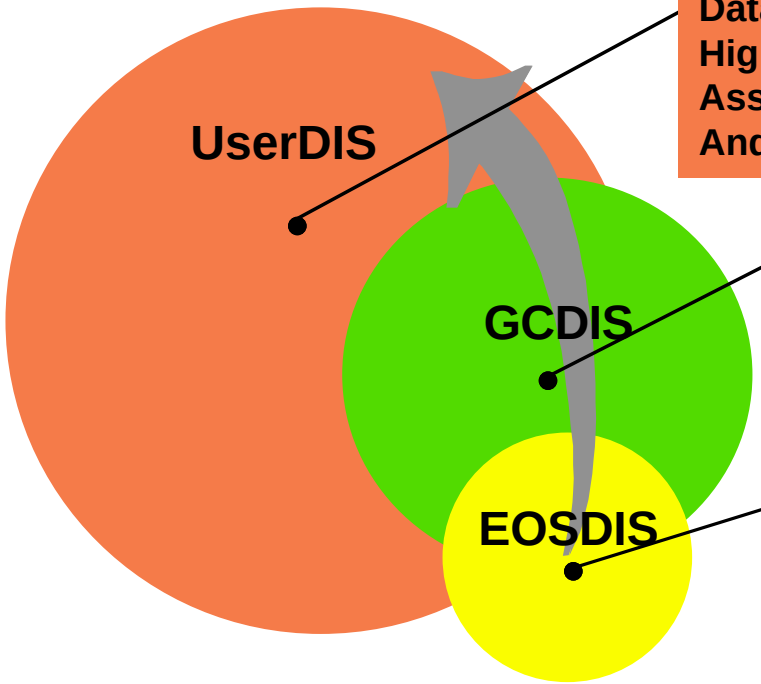


Must Accommodate A Wide Range of Capability Cost Effectively

Need To Support Broad Range Of Capacity Targets, And Each Target In Cost Effective Manner

High End Of Capacity Scale Is Cost Driver

System Quality Concepts

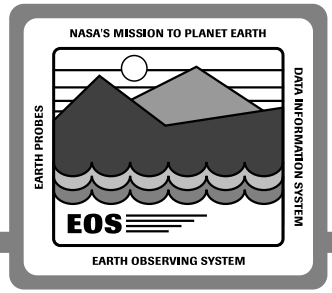


Data And Service Qualities Highly Variable, and Quality Assurance Concepts Unspecified And Unenforceable

Possibly Agreed Upon Guidelines For Data And Service Qualities and Quality Assurance, MOUs Likely

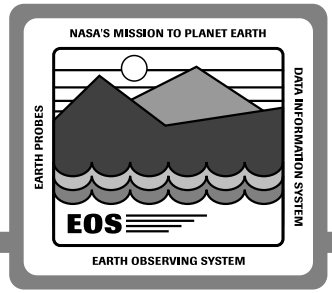
Well Defined Data And Service Qualities, High Degree Of Reliability, Availability, And Routine Quality Assurance

ECS As GCDIS / UserDIS Supplier



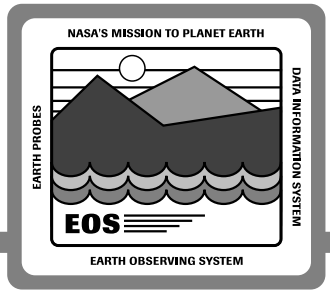
- **ability to advertise the availability of data and services**
- **uniform way of referencing data and services in a network**
- **a broker to resolve the matching of what the user needs with what is offered**
- **extensible user interface framework - enabling competitive development of components or complete service interfaces**
- **data access services for EOSDIS data with polymorphism characteristics (i.e., allows extension to GCDIS/userDIS data sets)**

Impact on ECS Components



- **separable so that they can be re-used in different configurations**
- **portable across system and network environments**
- **support variable 'capacity'**
- **functions of component can be re-configured outside of ECS environment**
- **tolerant of interface characteristics which differ from those specified for ECS (e.g., Reliability, Capacity, Response Time)**

Current Position



"There are many things which ECS could provide without leaving its mission envelope for GCDIS/userDIS, by carefully choosing the appropriate architectural direction"

- **presentation will show an architecture that is largely compatible with GCDIS/UserDIS mission**
- **will also review areas where ECS is not a good provider for GCDIS/UserDIS**

- **distribute white paper**
- **validation phase**
  - **verify user/provider characteristics with user community, GCDIS agencies and with ECS user/data modelling study**
  - **definition of components and differential cost from proposal baseline**
  - **further inter-site architecture definition (e.g draft protocol specs.)**
- **support integration of concepts into ECS architecture baselining**